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ABSTRACT

A study was initiated to identify desired outcomes for students completing their secondary vocational education experience and a model curricular framework. A steering committee then expanded the scope of the study to include elementary students. The study included: (1) a review of literature; (2) a survey sent to 482 teachers, administrators, school board members, legislators, and state educational boards and councils; and (3) public focus groups. The survey response rate was 69 percent. The data were analyzed in two sections: perception of current and past vocational education practices, and perception of academic and vocational experiences. Respondents agreed that there should be a greater emphasis on partnerships with business and community groups, an updating of the system, greater integration of academic and vocational education, more emphasis on systematic staff development, more emphasis on teaching concepts, and greater delineation of student competencies and performance standards. The study concluded that the desired student outcomes need to address applied academic skills; workplace basic skills; basic living skills; technological literacy; technology orientation and exploration; and technology and entrepreneurial studies. Eight recommendations were made to the State Board of Education to modernize vocational education. (Two appendices--Study Results and Modular Curricular Framework--and a 15-item bibliography are attached.) (NLL)

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Maximizing Potential:

For high-quality participation in the new work force

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A report of the
Modernization Study on Vocational Education
K-12

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NORTH DAKOTA COUNCIL ON VOCATIONAL EDUCATION

JULY 1989

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The Council on Vocational Education is a private-sector-led citizens advisory council. Members are appointed by the Governor and represent business, industry, labor, agriculture, and education. The primary responsibility of the Council is to advise the Governor, the Governor's Employment and Training Forum, the State Board for Vocational Education, and the business community on policies and initiatives that should be undertaken to strengthen and modernize vocational-technical education.

The Council is 100 percent federally funded through a $120,000 grant from the U.S. Department of Education for FY90.

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Maximizing Potential:

For high-quality participation in the new work force

A report of the
Modernization Study on Vocational Education
K-12

NORTH DAKOTA COUNCIL ON VOCATIONAL EDUCATION

JULY 1989

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INTRODUCTION

Nearly every North Dakota youth, male and female alike, will one day become a part of the work force. Their success will depend largely on how well they were prepared throughout their formal education experience, no matter when they elect to enter the work force--whether it be after high school, vocational-technical training, two- or four-year college, or graduate school.

The workplace is changing tremendously and is projected to be in a continual state of change. Small, incremental changes have given way to an exponential rate of change. The growth of scientific knowledge alone will guarantee continual changes. The U.S. Department of Commerce states that approximately 90 percent of all scientific knowledge has been generated in the past 30 years. In the next 10 to 15 years, this pool of knowledge will double.

The problem is that the new technologies created from this scientific knowledge, along with sophisticated quality controls, customer service, just-in-time productions, participative management, and a mix of economic and demographic forces, have created a **"human resource deficit** that threatens U.S. competitiveness and acts as a barrier to individual opportunities for all Americans." This from a recent study conducted by the American Society for Training and Development.

To respond to these changing societal needs, American educators were first called to action in the early 1980s with the publication of "A Nation At Risk: The Imperative for Educational Reform." Since then, hundreds of other studies and papers have addressed various elements of educational reform. The authors of these studies and papers have differed significantly in their solutions to this most pressing problem. One of the more conservative positions calls for a single secondary school curriculum for all students, eliminating all electives except for which foreign language to take. The more liberal positions promote expanding the curriculum to meet the individual needs of each child. While major differences exist among the various positions, two common threads were found in many of the studies and papers. They are the need for more "structure" and the need to provide more "substance" in our public school curriculum. These threads can be used to strengthen the delivery of education to provide a work force that can accommodate the significant increase in change projected for the 1990s and beyond.

For the most part, vocational education has been left out of the reform effort.

Vocational education, since its inception in the public schools in 1917, has strived to provide students with the skills necessary for entry into jobs requiring less than a four-year degree. However, with the work force changing, the physical skills once essential to agrarian and industrial societies have given way to intellectual and interpersonal skills needed for a technological, information society. This new work force seemingly needs to be technologically literate, grounded in the "basics," and more adaptive to the inevitable changes as we move into the 21st century.

The Council on Vocational Education has long recognized these changes occurring in our society and the challenges they place on vocational education. To address this issue, COVE established a goal "to advise and assist in the development of a long-range plan to modernize secondary vocational education."

PURPOSE OF THE STUDY

This study was initiated by the Council on Vocational Education to respond to a critical concern relating to the role of secondary vocational education. The concern is, given the significant changes that are occurring in the workplace, what ought secondary vocational education accomplish to help people prepare for these changes? Specifically, the Council wanted answers to the questions:

What are the "desired student outcomes" we want students to achieve upon the completion of their vocational education experiences?

What kind of "model curricular framework" should be put in place in order for students to attain those desired student outcomes?

STUDY METHODOLOGY

A study steering committee was established to give representative input from a variety of public- and private-sector organizations, including:

- AFL-CIO
- Greater North Dakota Association
- North Dakota Council of Local Administrators
- North Dakota Association of School Administrators
- North Dakota Association of Secondary School Principals
- North Dakota Council on Vocational Education
- North Dakota Department of Public Instruction
- North Dakota Economic Development Commission
- North Dakota Education Association
- North Dakota School Boards Association
- North Dakota State Board of Higher Education
- North Dakota State Board for Vocational Education
- North Dakota State Legislature
- North Dakota Vocational Association
- North Dakota Vocational-Technical Teacher Educators Association

The steering committee expanded the scope of the study to include identifying the vocational and career outcomes needed for elementary as well as secondary education students.

The study included:

- A review of current literature.
- A survey to gain the public's perception of how well vocational education is currently being accomplished, along with what ought to be accomplished.
- A series of "focus groups" to give the public an opportunity to advise on modernizing vocational education K-12.

A study survey, developed by the Mid-Continent Regional Education Laboratory, Denver, Colorado, was reviewed and refined by the steering committee. Steering committee members suggested key leaders from their respective organizations to respond to the survey. The survey was sent to 482 academic and vocational teachers, teacher educators, administrators, school board members, legislators, governor-appointed members of state educational boards and councils and their staffs, and leaders from business, labor, and economic development. In all, 335 (69 percent) responded to the survey.

STUDY FINDINGS

The survey results are included in Appendix A. The analyses of the data is divided into two sections:

Perception of current and past vocational education practices.

Perception of academic and vocational experiences.

Perception of Current and Past Vocational Education Practices

Survey participants were asked to indicate their agreement or disagreement with ten broad concepts relating to past and future practices of vocational education.

Survey responders rated equally their degree of agreement and disagreement on two of the survey statements. The two statements related to whether vocational education:

- Opportunities have been weakened as a result of increased graduation requirements.
- Should be given responsibility for incorporating career education into the elementary curriculum.

The remainder of the statements received a significant degree of agreement.

- 81 percent felt there should be a greater emphasis on partnerships with business, social agencies, and community groups to increase the relevance of vocational education programs.
- 77 percent felt the current vocational education system needs to be updated and modified to meet the changes in the work force, although 52 percent felt vocational education programs provide special populations and other at-risk groups with the necessary services to prepare them for the work force.
- 77 percent felt there needs to be greater integration of academic and vocational education.
- 74 percent felt there needs to be more emphasis given to the renewal of vocational education staff through the development of systematic staff development programs.

- o 73 percent felt vocational education should place greater emphasis on teaching concepts of technology and entrepreneurship.

- o 59 percent felt a need for greater delineation of student competencies and performance standards for vocational education programs.

Perception of Academic and Vocational Experiences
This section of the survey was divided into five categories.

Participants were asked to read a series of statements on skills and knowledge needed to prepare students for the world of work and to indicate the following:

- o Their degree of importance.

- o The degree to which they believed the skills were being provided in North Dakota schools.

- o The earliest level at which they believed the skill should be introduced in the public school curriculum.

Applied Academic Skills consist of applied communications, listening, math, science, and systems of technology skills. Respondents rated all of these skills over a 4.5 on a 5.0 scale on their degree of importance, except systems of technology (4.2).

In rating the schools' degree of achievement, the respondents rated these skills at a 3.2 or less. Applied listening skills was rated the lowest at a 2.4.

Respondents felt the applied academic skills should be introduced at the elementary level and the systems of technology should begin in junior high school.

Career Development Skills consist of four broad areas relating to the awareness of the world of work, with particular attention to a changing work force, technology, and computers. These include the beginning levels of career awareness, beginning awareness of technologies and change, keyboarding and computer use skills, and understanding the world of work. While the respondents rated all of these areas 4.3 or higher on a 5.0 scale on their degree of importance, they rated the schools' degree of achievement under a 3.1 on all four areas.

Respondents felt that career awareness, keyboarding, and understanding the world of work should be introduced at the elementary level. Awareness of technology and change should be introduced in junior high school.

Workplace Basics Skills are currently being promoted as the foundation for building broader, more sophisticated job-related skills. They were identified as "Skills Employers Want" in a study conducted by the American Society for Training and Development. The respondents rated these skills 4.15 to 4.8 on a 5.0 scale on their degree of importance.

- o Problem solving - 4.80
- o Self-esteem - 4.77

- o Learning to learn - 4.73
- o Teamwork - 4.62
- o Goal-setting/motivation - 4.55
- o Interpersonal skills - 4.54
- o Leadership - 4.53
- o Creative thinking - 4.50
- o Personal and career development - 4.39
- o Negotiation - 4.17
- o Organizational effectiveness - 4.15

While these skills received very high ratings for their degree of importance, their degree of achievement was rated much lower, ranging from 2.82 to 3.27 on a scale of 5.0. Organizational effectiveness, negotiations, and creative thinking were rated below a 3.0. The remainder of the workplace basics skills ranged between 3.0 and 3.27.

The majority of the respondents indicated that self-esteem, learning to learn, teamwork, problem solving, creative thinking, and goal-setting skills should be introduced at the elementary level. Leadership and personal and career development skills were recommended to be introduced in junior high school.

Organizational effectiveness was indicated by most to be introduced in the later high school years. Interpersonal skills and negotiation skills received ratings that were equally distributed among the four grade levels.

Work/Career Exploration Skills consist of a number of work or career exploratory areas which are generally provided by vocational education. Respondents varied in the rating of the degree of importance of these skills. Home repair (3.35) and clothing care skills (3.61) were rated the lowest. Understanding of job options (4.24) and career planning skills (4.31) were rated the highest. Word processing, resource management, nutrition skills, and survival skills were rated evenly at 4.1.

The respondents rated North Dakota schools an average of 3.06 on a 5.0 scale on the degree to which these skills are currently being achieved, with home repair (2.73) rated the least and nutrition skills (3.27) and word processing skills (3.33) rated the highest.

Views were mixed in terms of where these skills should be introduced into the curriculum. A majority of respondents indicated nutrition skills (59 percent) and survival skills (36 percent) should begin at the elementary level. Clothing care, resource management, and word processing were indicated as best being introduced in junior high school. The remaining work/career exploratory skills were indicated as best being introduced in the early high school years.

Initial Job Skills consist of seven broad occupational areas, often considered the traditional service areas of vocational education. These skill areas include agriculture, business/office, entrepreneurial, health, home economics, industrial/technical, and marketing/management. All of the initial job skill areas were rated between a 3.5 and a 4.0 on a 5.0 scale on the degree of importance. Agriculture and home economics were rated the lowest; entrepreneurial and marketing/management were rated the highest. In terms of the degree of achievement, the

responses varied from as low as 2.5 for entrepreneurial skills to as high as 3.4 for home economics and business/office.

While very few indicated that these skills should be introduced at the elementary level, responses were varied on when they should be introduced at the high school level. Home economics knowledge and skills was the only area where a large number of respondents (47 percent) indicated it should be introduced in junior high school. Business/office, agriculture, and health skills were given higher responses in the early high school years, while marketing/management was given slightly higher responses at the later high school years. Entrepreneurial and industrial/technical skills were rated nearly even for being introduced in the early or later high school years.

STUDY CONCLUSIONS

The following conclusions were drawn as a result of the review of literature, the survey on the modernization of vocational education, and the focus group discussions.

In order to prepare students for high-quality participation in the new work force projected for the 1990s and beyond:

- Vocational and academic education need to work together to integrate the teaching of workplace readiness skills and knowledge, beginning in kindergarten and continuing through the twelfth grade.

- More quality time on-task is needed, beyond the traditional 180-day school year, to give students the necessary instruction to address the technological, economic, social, demographic, and organizational changes affecting the workplace.

- Public elementary and secondary education need to place greater emphasis on the application of academic skills and knowledge and the integration of workplace basics skills, basic living skills, and technological literacy into the existing K-12 curriculum.

- Vocational education needs to place greater emphasis on teaching concepts of technology and entrepreneurship and integrating academic skills and workplace basics skills into the curriculum.

- Public schools and institutions of higher education need to expand their efforts in developing structured transitional programming from high schools to two-year colleges.

- Student competencies and performance standards need to be defined for all desired student outcomes.

- The Department of Public Instruction and the State Board for Vocational Education need to define their respective roles and responsibilities as they relate to the integration of the desired student outcomes into the academic and vocational curricula.

- Formal and expanded partnerships need to be formed with business, social agencies, and community groups to increase the relevance of the instruction.

- A major initiative needs to be undertaken to provide systematic research, curriculum, and staff development to help teachers integrate the desired student outcomes into the curricula.

- **"Desired student outcomes"** for preparing students for high-quality participation in the new work force need to address:

    - Applied Academic Skills
    - Workplace Basics Skills
    - Basic Living Skills
    - Technological Literacy
    - Technology Orientation and Exploration
    - Technology and Entrepreneurial Studies

- A **"model curricular framework"** to prepare students to achieve these desired student outcomes needs to be developed for elementary, middle/junior high school, and senior high school students. Appendix B outlines a model curricular framework designed to address the major conclusions of this study. This framework is presented in more detail in the study recommendations.

STUDY RECOMMENDATIONS

The North Dakota Council on Vocational Education recommends the Department of Public Instruction, the State Board of Higher Education, and the State Board for Vocational Education take the following actions to modernize vocational education in North Dakota's elementary and secondary schools:

Recommendation 1

The State Board for Vocational Education should update and modify its present secondary system to meet the changing needs of the work force by placing greater emphasis on teaching concepts of technology and entrepreneurship and the integration of academic skills and workplace basics skills into the curriculum. To accomplish the recommendation, the Council further recommends the Board focus its efforts at the secondary level to accomplish the following "desired student outcomes":

- Applied Academic Skills
- Workplace Basics Skills
- Basic Living Skills
- Technology Orientation and Exploration
- Technology and Entrepreneurial Studies

These desired student outcomes are briefly described as follows:

Applied Academic Skills should be integrated into and reinforced in the existing curriculum to provide students with relevant instruction in the application of reading, writing, and computation skills. This instruction should reflect the actual use on the job and simulate specific job tasks.

Workplace Basics Skills should be integrated into the existing curriculum to provide students with the foundation for building broader, more sophisticated job-related skills. These skills include:

- **Learning to Learn**--the ability to acquire the knowledge and skills needed to learn effectively, no matter what the learning situation.
- **Listening**--the ability to heed the key points of customers', suppliers', and co-workers' concerns.
- **Speaking**--the ability to convey an adequate response to those concerns.
- **Problem Solving**--the ability to think on one's feet.
- **Creative Thinking**--the ability to come up with innovative solutions.
- **Personal and Career Development**--the awareness of the skills needed to perform well in the workplace.
- **Self-Esteem**--the ability to have pride in one's self and believe in one's potential to be successful.
- **Goal-Setting/Motivation**--the ability to know how to get things done.
- **Teamwork**--the ability to work with others to achieve a goal.
- **Interpersonal Skills**--the ability to get along with customers, suppliers, co-workers, and others.
- **Negotiation**--the ability to build consensus through give and take.
- **Leadership**--the ability to assume responsibility and motivate co-workers when necessary.
- **Organizational Effectiveness**--the understanding of where the organization is headed and how one can make a contribution.

The State Board for Vocational Education should further consider utilizing the competencies and student outcomes identified in the National Career Counseling and Development Guidelines as they work to integrate the workplace basics into the curriculum.

Basic Living Skills curriculum should be implemented in the 7th through 12th grades to provide students with the knowledge and skills necessary for an optimum quality of life for individuals and their families and to understand their effects in the workplace. This studies program should consist of structured and substantive courses that address:

- o Individual, Child, and Family Development
- o Consumer and Resource Management

Technology Orientation and Exploration curriculum should be implemented at the junior high school level and in small rural high schools to introduce students to the increasing effects technology has on our lives. This curriculum should be a structured sequence of substantive courses designed to orient students to the vast variety of technologies, to explore these technologies, and to assist students in making informed and meaningful educational and occupational decisions as they relate to technology. This curriculum should consist of:

- o Keyboarding and Computer Use Skills
- o Systems of Technology
- o Technology and the Workplace
- o Introduction to Entrepreneurship

Technology and Entrepreneurial Studies should be implemented as a program of structured and substantive options for students to study during the 9th through 12th grades. This studies program should be considered by schools with sufficient enrollment to assure quality instruction. These study programs should be designed to prepare students with knowledge and skills relating to a cluster of jobs revolving around four broad areas of concentration:

- o Biological/Chemical Technology
- o Physical Technology
- o Information Technology
- o Entrepreneurial Studies

The intent of this studies program is to provide students with both the theory and the application of skills leading toward entry-level employment or articulation into postsecondary education.

This studies program calls for a core of courses or activities to be taken in addition to the areas of concentration. These include:

- o General Education Requirements
- o Applied Mathematics
- o Applied Communications
- o Structured Work Experience
- o Employability Development

Each of the four areas of concentration begins with a prerequisite course relating to the specific program.

- o Biological/Chemical Technology would require a one-semester course in Applied Bio-Chemistry.
- o Physical Technology would require the first five units of the Principles of Technology curriculum.
- o Information Technology would require a one-semester course in Introduction to Information Technology.
- o Entrepreneurial Studies would require a one-semester course in Principles of Entrepreneurship.

Each of these areas of concentration has a series of structured and substantive courses, offering occupation-specific knowledge and skills related to the individual program. The "model curricular framework" for the Technology and Entrepreneurial Studies program consists of the following:

Biological/Chemical Technology

- o Applied Bio-Chemistry
- o Health Professions Knowledge and Skills
- o Agricultural Knowledge and Skills

Physical Technology

- o Principles of Technology
- o Agricultural Knowledge and Skills
- o Industrial Technology Knowledge and Skills

Information Technology

- o Introduction to Information Technology
- o Business and Office Knowledge and Skills
- o Industrial/Technical Knowledge and Skills
- o Marketing/Management Knowledge and Skills

Entrepreneurial Studies

- o Principles of Entrepreneurship
- o Agri-Business Knowledge and Skills
- o Business and Office Knowledge and Skills
- o Marketing/Management Knowledge and Skills

Recommendation 2

The Department of Public Instruction should consider modifying its vision of education beyond its present mission by expanding what they are currently promoting as the "essential outcomes" for elementary and secondary education. These essential outcomes include:

- o Communication competencies (reading, writing, and speaking), including the ability to interact and cooperate successfully in small groups.

- Mathematical and scientific competencies, including an understanding of the nature and utility of information and technical systems.

- Reasoning and problem-solving competencies, including learning how to learn, decision making, and knowledge application.

- A broad understanding of local, state, national, and international societies as acquired through the study of history, political science, and economics.

- An understanding of people and culture as acquired through the study of psychology, literature, the arts, and through personal and multi-cultural experiences.

- Personal values such as self-confidence, enthusiasm for learning, responsibility toward others, commitment to good health, and a maturity that reflects responsibility toward work.

- Career preparation and continued education.

These essential outcomes should be modified to include the application of academic skills and knowledge and the integration of workplace basics skills, basic living skills, and technological literacy into the existing curriculum. These student outcomes are briefly described as follows:

Applied Academic Skills include competence in reading, writing, and computation and should be applied to real-life situations, including the world of work. Applied academic skills should be introduced as early as kindergarten and continue throughout high school.

Workplace Basics Skills, which are currently being promoted as the foundation for building broader and more sophisticated job-related skills, should be integrated into the existing curriculum K-12, including:

- **Learning to Learn**--the ability to acquire the knowledge and skills needed to learn effectively, no matter what the learning situation.

- **Listening**--the ability to heed the key points of customers', suppliers', and co-workers' concerns.

- **Speaking**--the ability to convey an adequate response to those concerns.

- **Problem Solving**--the ability to think on one's feet.

- **Creative Thinking**--the ability to come up with innovative solutions.

- **Personal and Career Development**--the awareness of the skills needed to perform well in the workplace.

- **Self-Esteem**--the ability to have pride in one's self and believe in one's potential to be successful.

- **Goal-Setting/Motivation**--the ability to know how to get things done.

- **Teamwork**--the ability to work with others to achieve a goal.

- **Interpersonal Skills**--the ability to get along with customers, suppliers, co-workers, and others.

- **Negotiation**--the ability to build consensus through give and take.

- **Leadership**--the ability to assume responsibility and motivate co-workers when necessary.

- **Organizational Effectiveness**--the understanding of where the organization is headed and how one can make a contribution.

The Department of Public Instruction should further consider utilizing the competencies and student outcomes identified in the National Career Counseling and Development Guidelines as they work to integrate the workplace basics into the existing curriculum.

Basic Living Skills, which consist of foods and nutrition skills and home and personal survival skills, should be integrated into the existing curriculum K-6.

Technological Literacy, which consists of technological awareness and keyboarding and computer use skills, should be integrated into the existing curriculum K-12.

Recommendation 3

The State Board for Vocational Education should expand its efforts in creating formal and structured partnerships between the education community and business, labor, social agencies, Job Service, and community groups. These partnerships should be both state based and community based and developed by key decision-makers with the highest levels of policy-making authority within their respective organizations.

To accomplish this recommendation, the Council further recommends the state provide incentives for communities to form a local or regional Committee on Education and Training for Employment, consisting of leaders in secondary and postsecondary education, economic development, business and industry, Job Service, and Human Services. This committee would be charged with developing specific local partnerships and educational programs based on the needs of the community.

Recommendation 4

The State Board for Vocational Education and the Department of Public Instruction should develop performance standards for each of the desired student outcomes.

These standards should establish the expectations for each of the desired student outcomes. They should describe the program philosophy, community needs assessment, exit outcomes, program outcomes, course outcomes, unit outcomes, student competencies, evaluation criteria, follow-up data, and other standards designed to measure the degree of success in students accomplishing the desired student outcomes.

Recommendation 5

The State Board for Vocational Education should consider undertaking a major initiative designed to provide systematic research, curriculum, and staff development to assist teachers to integrate and implement the desired student outcomes into the curricula.

To accomplish this recommendation, the Council further recommends the State Board consider establishing a "Center for Technology and Entrepreneurial Studies" responsible for research, curriculum, and staff development relating to the desired student outcomes. This center should be a consortium of public and private institutions in partnership with the business community. It should be staffed by qualified professionals knowledgeable in the areas of research, curriculum, and staff development. The purpose of the center would be to assist the state of North Dakota in:

- The development of program standards for each of the desired student outcomes.
- The development, procurement, and dissemination of curriculum and instructional material for each of the desired student outcomes.
- The development of instructional personnel (including administrators, counselors, and teachers) to implement programs, courses, and activities designed to address the desired student outcomes.
- The development of new teaching methods to expand and enhance the desired student outcomes.
- Other related duties as may be assigned.

Recommendation 6

The State Board of Higher Education and its institutions of higher education should consider undertaking a major initiative to provide pre-service and in-service programs designed to train and retrain instructional personnel responsible for the implementation of the "desired student outcomes" and the "model curricular framework" outlined in this report. To accomplish this recommendation, the

Council further recommends the State Board of Higher Education work in cooperation with the State Board for Vocational Education to assist in the funding and development of the "Center for Technology and Entrepreneurial Studies."

Recommendation 7

The State Board of Higher Education and the State Board for Vocational Education should consider expanding existing policies on articulation to utilize the model curricular framework, as presented in this report, as the foundation for additional work in Tech Prep, 2+2, or other articulation programs.

Recommendation 8

The State Legislature should seriously consider legislation which would increase the number of days and/or the number of hours per day public schools be open to provide quality instruction. The increased demands for learning have long surpassed the amount of time currently made available by our public schools for the teaching/learning process.

If the United States and, as importantly, North Dakota are to regain economic prominence, the workers of tomorrow must be more intelligent, more creative and more articulate than those of the past. This can only be done by providing more quality time on-task and making the teaching/learning process more applicable and relevant to the world around us.

APPENDIX A: STUDY RESULTS

EVALUATION OF CURRENT VOCATIONAL EDUCATION PROGRAMS

Please indicate your agreement or disagreement with the following items:

		SD	DI	NO	AG	SA
1.	The current vocational education system needs to be updated and modified to meet the changes in the world of work.	2	4	18	46	31
2.	The movement toward greater emphasis on high school graduation requirements has weakened vocational education opportunities.	15	29	24	20	12
3.	There is need for greater integration of academic and vocational education.	3	4	16	44	33
4.	Vocational education should be given responsibility for career education units and content which are incorporated in the elementary school curriculum.	12	23	33	24	8
5.	North Dakota vocational education programs provide students with up-to-date technology and preparation.	5	24	40	25	6
6.	Vocational education programs have provided special populations and at-risk students with services necessary for preparing them for the work force.	3	15	29	41	11
7.	There is need for greater delineation of student competencies and performance standards for vocational education programs.	2	10	29	47	12
8.	There is need for greater emphasis on partnerships with business, social agencies, and community groups to increase the relevance of vocational education programs.	2	6	11	41	40
9.	More emphasis should be given to the renewal of vocational education staff through the development of systematic staff development programs.	1	4	21	45	29
10.	Vocational education should place greater emphasis on teaching concepts of technology and entrepreneurship.	2	2	22	46	27

VOCATIONAL AND ACADEMIC EXPERIENCES

The preparation of students for the world of work may be implemented in a variety of ways. Listed below are a number of educational experiences related to vocational education. Please read them and indicate (1) their degree of importance; (2) the degree to which you believe they are being provided in North Dakota schools; and (3) the earliest level when you believe they should be introduced (e.g., E = elementary school, M = middle or junior high school, B = beginning high school years of 9th- and 10th-grade, and L = later high school years of 11th- and 12th-grade).

PRELIMINARY SKILLS

Degree of Importance						Degree of Achievement					Grade Level
NI	xx	IM	xx	VI		LO	xx	ME	xx	HI	
0	2	13	41	45	Beginning levels of career awareness	8	30	44	15	3	E=51 M=32 B=15 L= 3
1	0	7	39	53	Beginning awareness of technologies and change	5	27	43	20	4	E=30 M=49 B=17 L= 4
0	1	7	38	54	Keyboarding and computer use skills	6	19	35	33	7	E=58 M=33 B= 7 L= 2
1	2	6	32	60	Understanding the world of work	7	27	37	19	9	E=40 M=36 B=16 L= 8

CONTINUING FOUNDATIONS

Degree of Importance						Degree of Achievement					Grade Level
NI	xx	IM	xx	VI		LO	xx	ME	xx	HI	
0	0	3	27	69	Applied communication skills	5	19	39	24	13	E=61 M=27 B=11 L= 1
0	1	3	28	69	Applied listening skills	6	25	38	18	13	E=74 M=18 B= 7 L= 1
0	2	12	48	38	Systems of technology skills	7	26	41	20	6	E=13 M=52 B=23 L=13
0	1	2	34	64	Applied math skills	6	20	36	26	12	E=51 M=30 B=14 L= 5
1	1	4	38	57	Applied science skills	6	22	35	26	11	E=44 M=32 B=17 L= 7

INITIAL JOB SKILLS

Degree of Importance						Degree of Achievement					Grade Level
NI	xx	IM	xx	VI		LO	xx	ME	xx	HI	
1	5	35	41	17	Business and office knowledge and skills	2	12	44	33	10	E= 1 M=28 B=46 L=26
1	8	43	35	14	Agricultural knowledge and skills	4	12	44	32	8	E= 7 M=35 B=43 L=15
1	3	31	47	18	Health professions Knowledge and skills	4	26	44	21	5	E=10 M=28 B=36 L=26
2	6	38	39	15	Home economics knowledge and skills	0	9	46	38	6	E= 8 M=47 B=35 L=10
1	4	23	41	32	Entrepreneurial knowledge and skills	21	30	28	17	4	E= 7 M=20 B=36 L=37
1	3	22	52	23	Marketing and management knowledge and skills	12	24	36	22	7	E= 1 M=20 B=36 L=42
2	1	24	48	25	Industrial and technical knowledge and skills	8	20	41	25	7	E= 1 M=24 B=39 L=36

COMPETENCIES AND OUTCOMES

Degree of Importance						Degree of Achievement					Grade Level
NI	xx	IM	xx	VI		LO	xx	ME	xx	HI	
0	1	4	28	67	Teamwork	5	17	39	24	15	E=68 M=22 B= 7 L= 2
0	1	5	33	60	Leadership	5	23	36	25	11	E=34 M=41 B=19 L= 6
0	0	3	19	77	Learning to learn	10	24	33	19	14	E=69 M=22 B= 6 L= 3
0	1	1	20	79	Problem solving	12	26	32	15	16	E=56 M=32 B= 8 L= 4
0	1	5	37	57	Creative thinking	12	26	34	20	8	E=50 M=28 B=13 L= 9
0	0	3	17	80	Self-esteem	4	23	31	23	18	E=80 M=16 B= 3 L= 1
0	0	4	32	63	Goal-setting/ motivation	6	27	32	24	11	E=45 M=38 B=12 L= 5
1	1	9	41	49	Personal and career development skills	5	24	41	22	8	E=10 M=42 B=37 L=11

COMPETENCIES AND OUTCOMES--continued

Degree of Importance						Degree of Achievement					Grade Level
NI	xx	IM	xx	VI		LO	xx	ME	xx	HI	
0	0	7	27	65	Interpersonal skills	4	20	39	24	13	E=24 M=27 B=32 L=17
0	1	14	47	37	Negotiation	9	28	39	17	7	E=24 M=26 B=25 L=25
0	1	18	46	35	Organizational effectiveness	10	26	38	19	6	E= 6 M=26 B=28 L=40
3	7	20	34	36	Technical skills specific to a job	4	15	38	30	12	E= 2 M=11 B=29 L=58
0	2	15	44	40	Basic technical skills common to cluster of jobs	3	16	38	33	11	E= 4 M=25 B=43 L=28

WORK EXPLORATION

Degree of Importance						Degree of Achievement					Grade Level
NI	xx	IM	xx	VI		LO	xx	ME	xx	HI	
2	4	19	32	43	Survival skills	7	20	38	23	11	E=36 M=33 B=20 L=11
0	3	20	37	40	Nutrition skills	5	12	44	29	10	E=59 M=26 B=12 L= 4
2	7	38	34	19	Clothing care skills	6	19	46	24	5	E=31 M=43 B=22 L= 4
0	3	20	45	32	Resource management skills	6	26	45	18	6	E= 7 M=37 B=35 L=21
3	11	41	33	11	Home repair skills	10	29	39	17	4	E= 1 M=23 B=41 L=34
0	3	21	43	33	Word processing skills	3	12	43	33	9	E=20 M=35 B=34 L=11
0	1	12	37	49	Career planning skills	4	23	41	22	10	E= 9 M=35 B=38 L=17
0	1	13	44	42	Understanding of job options	5	28	39	20	9	E= 5 M=23 B=38 L=34

APPENDIX B: MODEL CURRICULAR FRAMEWORK

ELEMENTARY STUDENTS

- **Applied Academic Skills (Integrated)**
  - Applied Communications Skills
  - Applied Mathematics Skills
  - Applied Science Skills

- **Workplace Basics Skills (Integrated)**
  - Personal and Career Development
  - Problem Solving
  - Self-Esteem
  - Learning to Learn
  - Listening
  - Oral Communications
  - Teamwork
  - Goal-Setting/Motivation
  - Creative Thinking
  - Leadership
  - Interpersonal Skills
  - Negotiation
  - Organizational Effectiveness

- **Basic Living Skills (Integrated)**
  - Foods and Nutrition Skills
  - Home/Personal Survival Skills

- **Technological Literacy (Integrated)**
  - Technological Awareness
  - Keyboarding and Computer Use Skills

MIDDLE/JUNIOR HIGH SCHOOL STUDENTS

- **Applied Academic Skills (Integrated)**
  - Applied Communications Skills
  - Applied Mathematics Skills
  - Applied Science Skills

- **Workplace Basics Skills (Integrated)**
  - Personal and Career Development
  - Problem Solving
  - Self-Esteem
  - Learning to Learn
  - Listening
  - Oral Communications
  - Teamwork

Goal-Setting/Motivation
Creative Thinking
Leadership
Interpersonal Skills
Negotiation
Organizational Effectiveness

- **Basic Living Skills**
  Consumer and Resource Management Skills
  Individual, Child, and Family Development Skills

- **Technological Orientation and Exploration**
  Technology and the Workplace
  Systems of Technology
  Advanced Keyboarding and Computer Use Skills
  Introduction to Entrepreneurship

SENIOR HIGH SCHOOL STUDENTS

- **Applied Academic Skills (Integrated)**
  Applied Communications Skills
  Applied Mathematics Skills
  Applied Science Skills

- **Workplace Basics Skills (Integrated)**
  Personal and Career Development
  Problem Solving
  Self-Esteem
  Learning to Learn
  Listening
  Oral Communications
  Teamwork
  Goal-Setting/Motivation
  Creative Thinking
  Leadership
  Interpersonal Skills
  Negotiation
  Organizational Effectiveness

- **Basic Living Skills**
  Consumer and Resource Management Skills
  Individual, Child, and Family Development Skills

- **Technology and Entrepreneurial Studies**
  Studies Core
  ...General Education Requirements
  ...Applied Mathematics
  .. Applied Communications

...Structured Work Experience
...Employability Development

Biological/Chemical Technology

...Applied Bio-Chemistry
...Health Profession Knowledge and Skills
...Agricultural Knowledge and Skills

Physical Technology

...Principles of Technology
...Agricultural Knowledge and Skills
...Industrial/Technical Knowledge and Skills

Information Technology

...Introduction to Information Technology
...Business and Office Knowledge and Skills
...Industrial/Technical Knowledge and Skills
...Marketing/Management Knowledge and Skills

Entrepreneurial Studies

...Principles of Entrepreneurship
...Agri-Business Knowledge and Skills
...Business and Office Knowledge and Skills
...Marketing/Management Knowledge and Skills

BIBLIOGRAPHY

Bender, Myron, "American Educational System in the Technologies Designed to Prepare the Workforce for the Future," International Vocational Education and Training Conference Proceedings, Kaohsiung, Taiwan, Republic of China, 1987, p. 101.

Bottoms, Gene, and Stephanie S. Korcheck, Improving the Communications, Mathematics, and Science Competencies of Students Enrolled in Vocational Courses, Southern Regional Education Board, Atlanta, Georgia, 1989.

Carnevale, Anthony P., Leila J. Gainer, and Ann S. Melzer, "Workplace Basics: The Skills Employers Want," Training and Development Journal, October 1988, p. 23.

Focus on the Future, 1986 Governor's Conference on Public Education, Department of Public Instruction, Bismarck, North Dakota, 1986.

Home and Career Skills, Grades 7 and 8, University of the State of New York, Albany, New York, 1986.

Home Economics Concepts: A base for curriculum development, Coalition for Vocational Home Economics Education, 1989.

Kaagen, Stephen, Education for Work, K-12, The National Center for Research in Vocational Education, Occasional Paper 115, 1986.

National Career Counseling and Development Guidelines, National Occupational Information Coordinating Committee, Washington, District of Columbia, 1988.

National Commission on Excellence in Education, A Nation at Risk: The Imperative for Educational Reform, Washington, D.C., 1983.

Randall, Ruth, Restructured Model for Secondary Vocational Education; A report submitted to Governor Rudy Perpich and the 1989 Minnesota State Legislature, Minnesota Dept. of Education, December 1, 1988.

Renner, Ted, A Comprehensive High-Tech Equipment Utilization Plan to Support the Fundamental Educational Demands of Secondary Schools within a Modern Technological Society through Enhanced Vocational Education, North Dakota State Board for Vocational Education, Bismarck, North Dakota, 1988.

Ryan, Ray D., The Role of Vocational Education in North Dakota's Secondary School, North Dakota State Advisory Council for Vocational Education, Fargo, North Dakota, 1984.

Strengthening Academics in Vocational Technical Education in Ohio, Ohio Council on Vocational Education, Columbus, Ohio, 1987.

The Unfinished Agenda: The Role of Vocational Education in the High School, The National Commission on Secondary Vocational Education, The National Center for Research in Vocational Education, Columbus, Ohio,

Weber, James M., and Nancy F. Puleo, Dynamics of Secondary Programs Assisted Under the Carl D. Perkins Act, The National Center for Research in Vocational Education, Columbus, Ohio, 1988.

NORTH DAKOTA COUNCIL ON VOCATIONAL EDUCATION
1989-90

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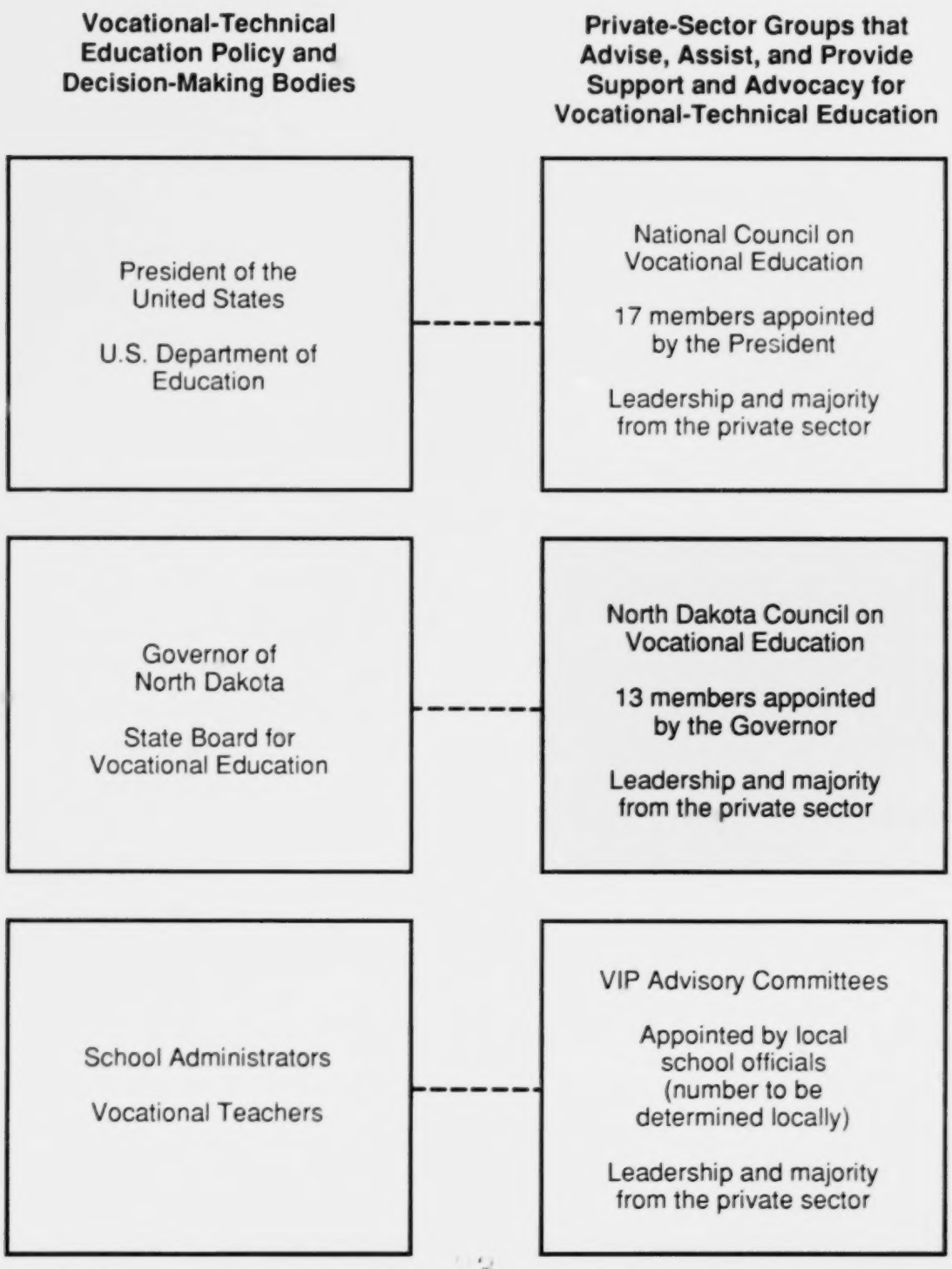
CITIZENS ADVISORY COMMITTEES

A KEY TO GREATER VOCATIONAL-TECHNICAL EDUCATION/PRIVATE-SECTOR COOPERATION


Vocational-Technical Education Policy and Decision-Making Bodies
Private-Sector Groups that Advise, Assist, and Provide Support and Advocacy for Vocational-Technical Education
President of the United States
U.S. Department of Education
National Council on Vocational Education
17 members appointed by the President
Leadership and majority from the private sector
Governor of North Dakota
State Board for Vocational Education
North Dakota Council on Vocational Education
13 members appointed by the Governor
Leadership and majority from the private sector
School Administrators
Vocational Teachers
VIP Advisory Committees
Appointed by local school officials (number to be determined locally)
Leadership and majority from the private sector